

Chapter 10

Coyote Damage to Livestock and Other Resources

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ABSTRACT

The diversity of coyote damage problems in the United States was illustrated using records of damage reported to the Animal Damage Control (ADC) program in Fiscal Year 1990 (FY 90). Resource owners' estimates of the value of damaged resources totalled \$10.5 million; 94 percent consisted of sheep, lambs, calves, goats and other livestock, 3 percent of poultry and fowl, 2 percent of property, and 1 percent of miscellaneous birds and mammals, pets, crops, and other resources. In addition, 56 human health and safety incidents were recorded. Comparison of ADC program records of reported damage to published estimates of total damage indicated that 19 percent of sheep, 23 percent of lambs, and 36 percent of goats killed by coyotes in the United States in FY 90 were reported to the ADC program.

INTRODUCTION

Coyote predation is a well-recognized cause of livestock loss in North America. Several studies have attempted to estimate the economic value of such losses (Cain et al. 1972; Gee et al. 1977; Gee 1978; USDI 1978, 1979; Wade 1982; Wagner 1988; USDA 1990; NASS 1991b). Most of these reports deal with sheep in the western United States, particularly in the 17 westernmost, conterminous states that contain nearly 80 percent of the U.S. sheep industry (NASS 1991a). However, the nationwide survey of NASS (1991b) provides separate estimates for sheep, lambs, and goats lost to each major predator species in each state. NASS (1991b) estimated that coyotes in the United States killed sheep, lambs, and goats valued at \$16.4 million during 1990. Cattle and calf losses to coyotes and other predators nationwide were estimated at \$30.7 million in 1975 (Gee 1978).

Coyotes are also involved in many other kinds of damage that have received relatively little study. In this paper I illustrate the diversity of coyote problems encountered by wildlife damage managers in the United States by presenting a tabulation of all coyote damage incidents reported to ADC program offices in FY 90, the most recent year for which compilations were available at the time of writing. Coyote attacks on humans are also mentioned as an unusual but significant aspect of coyote management in modern society.

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METHODS

Federal/Cooperative ADC programs have been conducted for many years in most states. Program emphasis varies from state to state depending on local needs and funding, but protection of livestock from predators is a major activity in most western states. Each state program is managed by a director with assistant state directors, directors, district supervisors, and other administrative staff as needed to direct the field activities of wildlife damage control specialists. Damage control activities are financed by Federal, State, and local governmental agencies and by private cooperators.

ADC program services consist primarily of direct control assistance (program employees conduct damage control activities) and technical assistance (program employees provide information, equipment, or materials for use by others to control damage). A detailed description of these activities was provided by USDA (1990). Information about the nature and magnitude of damage is provided when ADC program assistance is requested or agreements to provide control assistance are signed. ADC personnel record this information and verify it through field inspections where appropriate. All field reports of reported damage that was attributed to coyotes in FY 90 (October 1, 1989, through September 30, 1990) were compiled for presentation in this report. Economic values of lost or damaged animals or other resources are as reported by the resource owner or person who reported the damage.

It is important to note that only a fraction of the damage caused by coyotes or other kinds of animals is reported to the ADC program. Therefore, ADC program tabulations of reported damage should not be misinterpreted as

estimates of total damage. The relationship between reported and total coyote damage to sheep and goats is discussed later in this paper.

RESULTS

Coyote Damage to Livestock

Approximately 104,000 sheep, lambs, goats, cattle, and other livestock were reported to ADC personnel as damaged by coyotes during FY 90. The reported value of animals lost or damaged was approximately \$9.9 million (Table 1). Sheep and lambs, calves, and mohair goats were the most frequently reported classes of livestock damaged by coyotes. Most of this damage occurred in the western states. More damage to livestock was reported in Texas than in any other state. In addition, most of the exotic game mammals damaged by coyotes were in Texas.

Resource Category	Lost/Damaged (number)	Reported Value (dollars)
Sheep, adults	16,428	\$ 1,298,206
Sheep, lambs	52,008	3,358,350
Cattle, adults	470	258,139
Cattle, calves	8,256	3,166,978
Mohair goats, adults	8,964	506,479
Mohair goats, kids	7,257	329,692
Other goats, adults	2,243	115,386
Other goats, kids	4,975	168,685
Swine, adults	523	20,635
Swine, piglets	374	12,573
Horses, adults	4	250
Horses, foals	610	5,204
Exotic game mammals	1,744	632,520
Rabbits	31	265
Unspecified livestock	32 ¹	286
Totals	103,919	\$ 9,873,648

¹Plus "1 incident," value not stated.

Table 1. Coyote damage to livestock reported to ADC program offices during Fiscal Year 1990.

Resource Category	Lost/Damaged (number)	Reported Value (dollars)
Chickens	4,871	20,470
Chickens/Turkeys	536	2,309
Turkeys	8,903	300,766
Geese	686	10,345
Ducks	1,306	12,710
Ducks/Geese	17	105
Guinea Fowl	234	1,652
Pea Fowl	99	2,748
Pigeons	13	30
Domestic Fowl	3	15
Totals	16,668	351,150

Table 2. Coyote damage to poultry and fowl reported to ADC program offices during Fiscal Year 1990.

Coyote Damage to Poultry and Fowl

Coyotes damaged nearly 17,000 poultry and fowl valued at approximately \$351,000 (Table 2). The most significant poultry damage was to turkeys, which accounted for more than \$300,000 of the reported loss of poultry and fowl. Most of the coyote damage to chickens and turkeys was reported from Texas and California.

Coyote Damage to Property

Reports of coyote damage to property totaled approximately \$172,000 (Table 3). Most of this damage was to irrigation equipment in California. Damage also was reported to fence and equipment/machinery.

Coyote/Human Health & Safety Incidents

Three airport/aircraft incidents involving coyotes were reported; one each in California, Missouri, and Texas (Table 3). The California incident reportedly resulted in damage valued at \$10,000; dollar estimates were not provided for the Missouri or Texas incidents. Most of the unspecified "Human Health & Safety" incidents involved potentially rabid coyotes in Texas. Economic estimates of loss were not provided by most persons who reported health and safety incidents, as the costs and hazards associated with these incidents are difficult if not impossible to quantify monetarily.

Resource Category	Lost/Damaged (number)	Unit (number)	Value, if reported ¹ (dollars)
Airport/Aircraft	3	Incident	10,000
Unspecified "Human Health & Safety"	53	Incident	---
Equipment/Machinery	5	Incident	960
Fences	13	Incident	2,160
Irrigation/Drainage	36	Incident	130,785
	150	Feet	450
	20	Each	100
Other Property	6	Incident	37,550
Total Reported Value	---	---	182,005

¹Dollar values were not reported for most Human Health & Safety incidents.

Table 3. Coyote "Human Health & Safety" incidents and property damage reported to ADC program offices during Fiscal Year 1990.

Coyote Damage to Miscellaneous Birds and Mammals

Coyote damage was reported to a variety of game bird and mammal species (Table 4). The damage to pheasants, quail, and other upland game birds was reported from California. Losses of deer, pronghorn, and other wild mammals to coyotes were reported by state wildlife management agencies in Nebraska, Texas, and other states. Coyote damage also was reported to 2 federally designated endangered species—peregrine falcon and San Joaquin kit fox.

Dollar values attributed to wild animals lost to coyotes varied widely, from 33 cents each for 1,502 pronghorns to \$1,500 each for 2 elk calves (Table 4). Values were not reported for some incidents. The individuals or agencies who reported these values were not asked to provide the basis for their estimates.

Coyote Damage to Pets

Coyotes reportedly killed or damaged 183 pets valued at approximately \$13,000 (Table 4). Dollar values, when reported, were provided mostly by pet owners. These individuals were not asked to justify their estimates. Most reports of damage to pets were received by ADC program offices in California, Texas, Oregon, Nevada, and Oklahoma.

Resource Category	Lost/Damaged (number)	Unit (number)	Value, if reported (dollars)
Pheasants	502	Each	6,755
Quail	100	Each	400
Other Upland Game	75	Each	525
Canada Geese	63	Each	1,582
Peregrine Falcon	1	Each	---
Deer	51	Each	19,763
Pronghorn	1,502	Each	500
Elk (Wapiti) calves	2	Each	3,000
Bighorn Sheep	1	Incident	---
Kit Fox	3	Incident	3
Pets	183	Each	13,095
Totals	2,483	---	45,623

Table 4. Coyote damage to miscellaneous birds and mammals reported to ADC program offices during Fiscal Year 1990.

Coyote Damage to Fruit, Crops, Feed, and Pastures

Reported coyote damage to fruit, crops, feed, and pastures was valued at approximately \$35,000. Most of this damage was to watermelons in Alabama, Texas, and Oklahoma. Two incidents of coyote damage to truck gardens were reported in Arizona. Coyotes damaged stored livestock feed in Oklahoma and livestock pasture in Texas.

Total Reported Coyote Damage

Coyotes were responsible for a total of approximately \$10.5 million in reported damage, in addition to many other incidents for which dollar values were not reported. Approximately 94 percent of all reported monetary damage was to livestock (Table 1), 3 percent to poultry and fowl (Table 2), 2 percent to property (Table 3), and 1 percent to miscellaneous birds and mammals, pets, crops, and other resources (Tables 4,5).

Resource Category	Lost/Damaged (number)	Unit (number)	Value, if reported (dollars)
Watermelons	2,036	Each	6,717
	158	Acre	21,825
	10	Incident	50
Other melons	1	Acre	50
Grapes	1	Incident	250
Berries	1	Incident	10
Peanuts	1	Acre	200
Truck gardens	2	Incident	2,000
Non-human food items	1	Incident	10
Livestock feed	2	Incident	800
Pasture	150	Acre	2,000
Total Reported Value	---	---	34,912

Table 5. Coyote damage to fruit, crops, feed, and pasture reported to ADC program offices during Fiscal Year 1990.

DISCUSSION

Preponderance of Livestock in Reported Damage

Although coyotes are responsible for many kinds of damage, the preponderance of livestock in reported damage confirms conventional wisdom that the predominant coyote damage problem in the United States is predation upon domestic livestock, particularly sheep and lambs, calves, and goats. However, I suspect that the magnitude of coyote damage to resources other than livestock is much greater than these data (Tables 1-5) imply. Compared with others who sustain coyote damage, livestock producers probably tend to be more aware of the ADC program and therefore more likely to contact ADC personnel when damage occurs.

Reported Losses Compared With Total Losses

As noted earlier, only a fraction of the total damage attributable to coyotes is reported to ADC personnel. The relationship between reported and total damage is explored here for 3 kinds of livestock. In the following computations, I have assumed that it is appropriate to compare ADC program records of reported losses in FY 90 with NASS (1991b) estimates of total losses

for calendar year 1990, even though the fiscal year began and ended 3 months earlier than the calendar year.

Sheep:—ADC program records for FY 90 indicate reported losses of 16,428 adult sheep to coyotes (Table 1). The NASS survey of sheep and goat predator loss (NASS 1991b) estimated a total loss of 84,500 sheep to coyotes in 1990. On this basis, the ADC program recorded approximately 19 percent of the total loss of adult sheep to coyotes in FY 90.

Lambs:—ADC program records for FY 90 include reported losses of 52,008 lambs to coyotes (Table 1). The NASS survey estimated total losses of 227,400 lambs to coyotes in 1990. These data indicate that the ADC program recorded approximately 23 percent of total lamb losses to coyotes in FY 90.

Goats:—ADC program records for FY 90 show reported losses of 23,439 goats (all goats, Table 1) to coyotes. The NASS survey estimated that 64,900 head of goats were lost to coyotes in 1990. Based on these data, ADC program personnel recorded approximately 36 percent of total goat losses to coyotes in FY 90.

Coyote Attacks on Humans

To complete this discussion of wildlife damage management problems caused by coyotes, it seems appropriate to mention coyote attacks on humans, particularly children (Howell 1982; Carbyn 1989). Thankfully, such attacks are rare; none was reported to ADC program personnel in FY 90. Nevertheless, human/coyote interactions are important to wildlife damage managers because the extreme amount of publicity they receive arouses public concern. In addition, governmental agencies that manage public recreation areas may be held liable for damages that result from wild animal attacks.

At least one coyote attack on a human has been reported in Vermont (Smith 1992). More coyote/human interactions can be expected in eastern North America as coyote and human populations continue to increase.

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